

Serial number

Production year



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USER MANUAL



LABORATORY CENTRIFUGE

MPW – 351e

Centrifuge catalogue number: 10351e



Read this instruction before using the equipment!

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IVD

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Warning signs and hazard icons.



WARNING

Warning of potential injury or health risk.



DANGER

Risk of electric shock with potential for severe injury or death as a consequence.



DANGER

Biohazard with potential for risk to health or death as a consequence.



DANGER

Risk of explosion with potential for severe injury or death as a consequence.

1. Application.

The MPW-351e centrifuge is a table top laboratory centrifuge for *in vitro* diagnostic (IVD) equipped with, used to separation of samples took from people's, animal's and plant's components with different densities, to provide information about their biological state under the influence of the centrifugal force. Its construction ensures easy operation, safe work and wide range of applications at laboratories engaged in routine medical analyses, biochemical research works etc. This centrifuge is not biotight and therefore during centrifugation of preparations requiring biotightness one has to use closed and sealed containers and rotors. In the centrifuge, it is prohibited to centrifuge caustic, inflammable and explosive preparations.

2. Technical data.

Manufacturer:

MPW MED. INSTRUMENTS
46 Boremlowska Street, 04-347 Warsaw/Poland

Type:

MPW-351e

Mains L1+N+PE V/Hz $\pm 10\%$

230 V 50/60 Hz, 115 V 50/60 Hz

Maximum power consumption

320 W

Rotational speed range

100÷4500 rpm

Maximum capacity

0,8 ml

Maximum acceleration

3305 x g

Time range

0÷99 min,

SHORT- short duration operation

0 ÷ 10 min,

Interference level

PN-EN-55011

Noise level

56 dB

Physical data:

Depth

540 mm

Width

430 mm

Height

430 mm

Weight

42 kg

Environmental conditions:

PN-EN-61010-1 p. 1.4.1.

Ambient temperature

+2° ÷ 40° C

Relative humidity at ambient temperature

< 80 %

Installation category

II PN-EN 61010 -1

Degree of pollution

2 PN-EN 61010 - 1

Protection zone

300 mm

Statement of Conformity:

The following machine is in accordance with the regulations of the EU Directive 98/79/EC and with the harmonized standards PN-EN 61010-1 and PN-EN 61010-2-020.

2.1. Accessories.

2.1.1. Basic accessories (being enclosed to every centrifuge).

Cat. No.	Type of accessories	
17664	Complete clamp	pcs 1
17665	Spanner for the rotor	pcs 1
17642	Spanner for emergency opening of the cover	pcs 1
17861	Fuses WTA-T 4 A 250 V (230V)	pcs 2
17862	Fuses WTA-T 6,3 A 250 V (115V)	pcs 2
17866	Power cord 230 V	pcs 1
17867	Power cord 115 V (optionally)	pcs 1
20351e/Eng	Operating Instruction	pcs 1

2.1.2. Optional accessories.

Depending on customer's needs the MPW-351e centrifuge can be provided with below specified accessories:

OTHER ACCESSORIES

Indeks Cat. No	Nazwa Name	Probówka MPW MPW Tube
11215C/A	Wirnik kątowy 32 x 15/10ml, komplet z pojemnikami 13080 (O 17x100/120mm) (kąt 45°) Angle rotor 32 x 15/10ml, complete with buckets 13080 (O 17x100/120mm) (angle 45°) (max RPM: 4500 max RCF: 3283 x g R max: 14,5 cm)	15048,15050, 15053,15118
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15119
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15119
11215C/B	Wirnik kątowy 32 x 10ml, komplet z pojemnikami 13081 (O 17x70/85mm) (kąt 45°) Angle rotor 32 x 10ml, complete with buckets 13081 (O 17x70/85mm) (angle 45°) (max RPM: 4500 max RCF: 3283 x g R max: 14,5 cm)	15053
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15054,15120, 15419
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15054,15120, 15419
11253C/A	Wirnik kątowy 24 x 15/10ml, komplet z pojemnikami 13080 (O 17x100/120mm) (kąt 30°) **** DO WYCZERPANIA ZAPASÓW **** Angle rotor 24 x 15/10ml, complete with buckets 13080 (O 17x100/120mm) (angle 30°) **** SELL OUT **** (max RPM: 4500 max RCF: 2445 x g R max: 10,8 cm)	15048,15050, 15053,15118
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15119
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15119
11253C/B	Wirnik kątowy 24 x 10ml, komplet z pojemnikami 13081 (O 17x70/85mm) (kąt 30°) **** DO WYCZERPANIA ZAPASÓW **** Angle rotor 24 x 10ml, complete with buckets 13081 (O 17x70/85mm) (angle 30°) **** SELL OUT **** (max RPM: 4500 max RCF: 2445 x g R max: 10,8 cm)	15053
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15054,15120, 15419
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15054,15120, 15419

11254C/A	Wirnik kątowy 10 x 50ml na probówki Falcon®, komplet z pojemnikami 13275 lub 13278 z pokrywką 17151 (PC) (kąt 30°) Angle rotor 10 x 50ml for Falcon® tubes, complete with buckets 13275 or 13278 with PC cap 17151 (PC) (angle 30°) (max RPM: 4500 max RCF: 3011 x g R max: 13,3 cm)	15051 , 15052 (do/for 13275)
14248`	Wkładka redukcyjna na probówkę 30/25ml (O 26x102mm) Round carrier for 30/25ml tube (O 26x102mm)	15055, 15117
14089 do/for 13278	Wkładka redukcyjna na probówkę 15ml Falcon®/ Round carrier for 15ml Falcon®	
11254C/B	Wirnik kątowy 10 x 50ml na probówki Falcon®, komplet z pojemnikami 13276 (kąt 30°) Angle rotor 10 x 50ml for Falcon® tubes, complete with buckets 13276 (angle 30°) (max RPM: 4500 max RCF: 3011 x g R max: 13,3 cm)	15051, 15052
14035	Wkładka redukcyjna na probówkę 14ml (O 28,5/17x105mm) Round carrier for 14ml tube (O 28,5/17x105mm)	15046
14036	Wkładka redukcyjna na probówkę 5ml (O 28,5/14x92mm) Round carrier for 5ml tube (O 28,5/14x92mm)	
14043	Wkładka redukcyjna na probówkę 5ml (O 29/13x85mm) Round carrier for 5ml tube (O 29/13x85mm)	15120, 15419
14071	Wkładka redukcyjna na probówkę 30ml (O 25x100mm) Round carrier for 30ml tube (O 25x100mm)	15055, 15056, 15117, 15424
14089	Wkładka redukcyjna na probówkę 15ml Falcon® (O 17x120mm) Round carrier for 15ml Falcon® tube (O 17x120mm)	15050
14248	Wkładka redukcyjna na probówkę 30/25ml (O 26x102mm) Round carrier for 30/25ml tube (O 26x102mm)	15055, 15117
11453C/A	Wirnik kątowy 24 x 15/10ml, komplet z pojemnikami 13080 (O 17x100/120mm) (kąt 30°) **** DO WYCZERPANIA ZAPASÓW **** Angle rotor 24 x 15/10ml, complete with buckets 13080 (O 17x100/120mm) (angle 30°) **** SELL OUT **** (max RPM: 4500 max RCF: 2332 x g R max: 10,3 cm)	15048,15050, 15053,15118
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15119
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15119
11453C/B	Wirnik kątowy 24 x 10ml, komplet z pojemnikami 13081 (O 17x70/85mm) (kąt 30°) **** DO WYCZERPANIA ZAPASÓW **** Angle rotor 24 x 10ml + 8 x 2ml, complete with buckets 13081 (O 17x70/85mm) (angle 30°) **** SELL OUT **** (max RPM: 4500 max RCF: 2332 x g R max: 10,3 cm)	15053
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15054,15120, 15419
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15054,15120, 15419
11454C/A	Wirnik kątowy 12 x 15/10ml, komplet z pojemnikami 13080 (O 17x100/120mm) (kąt 30°) **** DO WYCZERPANIA ZAPASÓW **** Angle rotor 12 x 15/10ml, complete with 13080 buckets (O 17x100/120mm) (angle 30°) **** SELL OUT **** (max RPM: 4500 max RCF: 2490 x g R max: 11 cm)	15048,15050, 15053,15118
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15119
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15119

11454C/B	Wirnik kątowy 12 x 10ml, komplet z pojemnikami 13081 (O 17x70/85mm) (kąt 30°) **** DO WYCZERPANIA ZAPASÓW **** Angle rotor 12 x 10ml, complete with 13081 buckets (fi 17x70/85mm) (angle 30°) **** SELL OUT **** (max RPM: 4500 max RCF: 2490 x g R max: 11 cm)	15053
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15054,15120, 15419
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15054,15120, 15419
11455C	Wirnik kątowy 10 x 30/25ml, komplet z pojemnikami 13329 (kąt 30°) **** DO WYCZERPANIA ZAPASÓW **** Angle rotor 10 x 30/25ml, complete with buckets 13329 (angle 30°) **** SELL OUT **** (max RPM: 4500 max RCF: 2331 x g R max: 10,3 cm)	15055,15056, 15223,15424
14255	Wkładka redukcyjna na probówkę 7ml (O 13x100mm)	15054, 15119
14256	Wkładka redukcyjna na probówkę 15/10ml (O 17x120mm)	15046, 15048, 15053, 15118
11465C/A	Wirnik kątowy 30 x 15/10ml, komplet z pojemnikami 13080 (O 17x100/120mm) (kąt 30°) Angle rotor 30 x 15/10ml, complete with buckets 13080 (O 17x100/120mm) (max RPM: 4500 max RCF: 3011 x g R max: 13,3 cm)	15048,15050, 15053,15118
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15119
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15119
11465C/B	Wirnik kątowy 30 x 10ml, komplet z pojemnikami 13081 (O 17x70/85mm) (kąt 30°) Angle rotor 30 x 10ml, complete with buckets 13081 (O 17x70/85mm) (angle 30°) (max RPM: 4500 max RCF: 3011 x g R max: 13,3 cm)	15053
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15054,15120, 15419
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15054,15120, 15419
11501C/A	Wirnik kątowy 30 x 15/10ml, komplet z pojemnikami 13080 (O 17x100/120mm) (kąt 30°) Angle rotor 30 x 15/10ml, complete with 13080 buckets (O 17x100/120mm) (angle 30°) (max RPM: 4500 max RCF: 3011 x g R max: 13,3 cm)	15048,15050, 15053,15118
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15119
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15119
11501C/B	Wirnik kątowy 30 x 10ml, komplet z pojemnikami 13081 (O 17x70/85mm) (kąt 30°) Angle rotor 30 x 10ml, complete with 13081 buckets (O 17x70/85mm) (angle 30°) (max RPM: 4500 max RCF: 3011 x g R max: 13,3 cm)	15053
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15054,15120, 15419
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15054,15120, 15419

11743C	Wirnik kątowy 12 x 30/25ml, komplet z pojemnikami 13329 (kąt 30°) Angle rotor 12 x 30/25ml, complete with buckets 13329 (angle 30°) (max RPM: 4500 max RCF: 2716 x g R max: 12 cm)	15055, 15056, 15223, 15424
14255	Wkładka redukcyjna na probówkę 7ml (O 13x100mm) Round carrier for 7ml tube (O 13/100mm)	15054, 15119
14256	Wkładka redukcyjna na probówkę 15/10ml (O 17x120mm) Round carrier for 15/10ml tube (O 17/120mm)	15046, 15048, 15053, 15118
12283C	Wirnik horyzontalny 2 x 50ml, komplet z 2 pojemnikami i pokrywkami (Al) 13279, na małe worki PRP 50ml ORTHOGEN® i z 2 pojemnikami 13437 Swing-out rotor 2 x 50ml, complete with two 13279 buckets and caps (Al), for small bags PRP 50ml ORTHOGEN® and with two 13437 buckets (max RPM: 4500 max RCF: 3509 x g R max: 15,5 cm)	
12285C	Wirnik horyzontalny titracyjny, komplet z 2 zawieszkami 13286 na płytki mikrotitracyjne lub bloki (85 x 130 x 60mm) Microtiter, swing-out rotor head, complete with 2 buckets 13286 for microtiter plates or blocks (85 x 130 x 60mm) (max RPM: 4300 max RCF: 2397 x g R max: 11,6 cm)	15102
12436	Wirnik horyzontalny 4 x 200ml Swing-out rotor 4 x 200ml (max RPM: 4500 max RCF: 3305 x g R max: 14,6 cm)	
13042	Pojemnik 2 x 50ml na probówki Falcon® (O 30x120mm) Bucket 2 x 50ml for Falcon® tubes (O 30 x120mm)	15050, 15052
13044C	Zawieszka 4 x 15ml na probówki Falcon®, komplet z pojemnikami 13080 (O 17x100/120mm) Hanger 4 x 15ml for Falcon® tubes, complete with 13080 buckets (O 17x100/120mm)	15048, 15050, 15053, 15118
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	
13045	Pojemnik 50ml na probówkę Falcon® (O 30x120mm) Bucket 50ml for Falcon® tube (O 30x120mm)	15051
13129C	Zawieszka 2 x 15ml na probówki Falcon®, komplet z pojemnikami 13080 (O 17x100/120mm) **** DO WYCZERPANIA ZAPASÓW **** Hanger 2 x 15ml for conical bottom tubes, complete with buckets 13080 (O 17x100/120mm) **** SELL OUT ****	15048,15050, 15053,15118
14082	Wkładka redukcyjna (O 13,3mm) Round carrier (O 13,3mm)	15119
14083	Wkładka redukcyjna (O 13,3mm) **** DO WYCZERPANIA ZAPASÓW **** Round carrier (O 13,3mm) **** SELL OUT ****	15119
13437	Pojemnik 200ml (O 57/100mm) Bucket 200ml (O 57/100mm)	
14072	Wkładka redukcyjna na probówkę 50ml (O 35/100mm) Round carrier for 50ml tube (O 35x100mm)	15116
14104	Wkładka redukcyjna 100ml (O 45,5x100mm) Round carrier 100ml (O 45,5x100mm) 34,00	15115
14106	Wkładka redukcyjna 7 x 7ml (O 13,5x100mm) Round carrier 7 x 7ml (O 13,5x100mm)	15054, 15119
14108	Wkładka redukcyjna 7 x 10ml (O 17x75mm), niska Round carrier 7 x 10ml (O 17x75mm), short	
14109	Wkładka redukcyjna 7 x 5ml (O 13,5x75mm), niska Round carrier 7 x 5ml (O 13,5x75mm), short	15120, 15419

14110	Wkładka redukcyjna 7 x 15/10ml (O 17x110mm) Round carrier 7 x 15/10ml (O 17x110mm)	15046, 15048, 15118
14111	Wkładka redukcyjna 5 x 15ml (O 16,7x110mm) Round carrier 5 x 15ml (O 16,7x110mm)	15048*, 15053, 15118
14113	Wkładka redukcyjna 50ml na probówkę Falcon® (O 30x120mm) Round carrier for 50ml Falcon® tube (O 30x120mm)	15052
14441	Wkładka redukcyjna 12 x 7ml (O 12,1x100mm) Round carrier 12 x 7ml (O 12,1x100mm)	15119
14446	Wkładka redukcyjna 12 x 5ml (O 12,1x75mm), niska Round carrier 12 x 5ml (O 12,1x75mm), short	15120, 15419
14447	Wkładka redukcyjna 12 x 1,2ml na probówki S-Monovette® (O 9x66mm) Round carrier 12 x 1,2ml for S-Monovette® tubes (O 9x66mm)	15016
14449	Wkładka redukcyjna 4 x 12ml (O 56,5/17,1x105), niska Round carrier 4 x 12ml (O 56,5/17,1x105), short	15046, 15053, 15118
14450	Wkładka redukcyjna 9 x 2/1,5ml (O 11x38,5mm) Round carrier 9 x 2/1,5ml (O 11x38,5mm)	15128
13438C	Pojemnik okrągły 200ml, komplet z pokrywką 17111 (PC) Round bucket 200ml, complete with 17111 cap (polycarbon)	
14072	Wkładka redukcyjna na probówkę 50ml (O 35/100mm) Round carrier for 50ml tube (O 35x100mm) 17,00	15116
14104	Wkładka redukcyjna 100ml (O 45,5x100mm) Round carrier 100ml (O 45,5x100mm)	15115
14106	Wkładka redukcyjna 7 x 7ml (O 13,5x100mm) Round carrier 7 x 7ml (O 13,5x100mm)	15054, 15119
14108	Wkładka redukcyjna 7 x 10ml (O 17x75mm), niska Round carrier 7 x 10ml (O 17x75mm), short	13437, 13438C
14109	Wkładka redukcyjna 7 x 5ml (O 13,5x75mm), niska Round carrier 7 x 5ml (O 13,5x75mm), short	15120, 15419
14110	Wkładka redukcyjna 7 x 15/10ml (O 17x110mm) Round carrier 7 x 15/10ml (O 17x110mm)	15046, 15048, 15118
14111	Wkładka redukcyjna 5 x 15ml (O 16,7x110mm) Round carrier 5 x 15ml (O 16,7x110mm)	15048*, 15053, 15118
14113	Wkładka redukcyjna 50ml na probówkę Falcon® (O 30x120mm) Round carrier for 50ml Falcon® tube (O 30x120mm)	15052
14441	Wkładka redukcyjna 12 x 7ml (O 12,1x100mm) Round carrier 12 x 7ml (O 12,1x100mm)	15119
14446	Wkładka redukcyjna 12 x 5ml (O 12,1x75mm), niska Round carrier 12 x 5ml (O 12,1x75mm), short	15120, 15419
14447	Wkładka redukcyjna 12 x 1,2ml na probówki S-Monovette® (O 9x66mm) Round carrier 12 x 1,2ml for S-Monovette® tubes (O 9x66mm)	15016
14449	Wkładka redukcyjna 4 x 12ml (O 56,5/17,1x105), niska Round carrier 4 x 12ml (O 56,5/17,1x105), short	15046, 15053, 15118
14450	Wkładka redukcyjna 9 x 2/1,5ml (O 11x38,5mm) Round carrier 9 x 2/1,5ml (O 11x38,5mm)	15128
13593	Pojemnik 100ml (O 45x94mm) Bucket 100ml (O 45x94mm)	
14181	Wkładka redukcyjna 5 x 2/7ml (O 44,5/12,5x100mm) Round carrier 5 x 2/7ml (O 44,5/12,5x100mm)	15054, 15119, 15120, 15419
14186	Wkładka redukcyjna 4 x 7ml na probówki Vacutainer® (O 13,1x100mm) Round carrier 4 x 7ml for Vacutainer® tubes (O 13,1x100mm)	15054, 15119, 15120, 15419

14187	Wkładka redukcyjna 4 x 15/10ml na probówki Vacutainer® (O 16,5x112mm) Round carrier 4 x 15/10ml for Vacutainer® tubes (O 16,5x112mm)	15046, 15048, 15053, 15118
14188	Podkładka (guma) pod probówki szklane 100/50/30/25ml Pad (rubber) under 100/50/30/25ml glass tubes	15052, 15115, 15116, 15117
14189C	Wkładka redukcyjna na probówkę 50ml Falcon® (O 30x120mm) lub Nalgene®, komplet z gumową podkładką 14188 Round carrier 50ml for Falcon® tube (O 30 x120mm) or Nalgene®, complete with rubber pad 14188	15051, 15052
14190C	Wkładka redukcyjna 30/25ml (O 25,5x102mm), komplet z gumową podkładką 14188 Round carrier 30/25ml (O 25,5 x100mm), complete with rubber pad 14188	15055, 15056, 15117
14192C	Wkładka redukcyjna 50ml (O 35x100mm), komplet z gumową podkładką 14188 Round carrier 50ml (O 35 x100mm), complete with rubber pad 14188	15116
14196	Podkładka (PA) pod probówki z PP 100ml PA pad under 100ml PP tube	15040
14226	Wkładka redukcyjna na probówkę 50ml z dnem stożkowym, wolnostojąca GREINER® (O 30x103mm / max wysokość probówki: 117mm) Round carrier for 50ml conical bottom tube, with skirt - GREINER® (O 13,1x100mm / max height of tube: 117mm)	

Catalog no **Specification**

17111 Polycarbonate cap for bucket No. 13438;
17151 Polycarbonate cap for bucket No. 13275;

2.2. Exploitation materials.



For operating in centrifuge one should use only original company's buckets comprised in the specification of accessories as well as test-tubes for centrifuges of proper diameter, length and strength. Utilization of test-tubes of other makes shall be agreed upon with manufacturer of the centrifuge. For cleaning and disinfecting one should use agents generally applied in the health service, such as e.g. *Aerodesina-2000*, *Lysoformin 3000*, *Melseptol*, *Melsept SF*, *Sanepidex*, *Cutasept F*.

3. Installation.

3.1. Unpacking of the centrifuge.

Open the package. Take out the cardboard box containing the accessories. Take out the centrifuge from the package. Keep the package and packing materials at hand for service transport.

3.2. Location.



The centrifuge shall not be located near the radiators and shall not be subjected to direct sunlight. The table for the centrifuge shall be stable and shall have flat-levelled table top. It is necessary to ensure a safety zone of the minimum 30 cm round the centrifuge from every direction. Normal operating conditions ambient temperature is from 15° C to 35° C. Passed parameters of the centrifuge are referring to the above named temperatures. At the change of the place from cold to warm one, condensation of water will occur inside the centrifuge. It is important then that sufficient time be provided for drying the centrifuge prior to starting the centrifuge again (minimum 4 hours).

3.3. Connection to mains.



Supply voltage given on the rating plate has to be consistent with local supply voltage. MPW Med. instruments laboratory centrifuges are 1st safety class devices and they are provided with the three-core cable with the plug resistant to dynamic loadings. Mains socket shall be provided with the safety pin. It is recommended to install emergency cut-out that shall be located far from the centrifuge, near the exit or beyond the room.

Supply voltage 230 V 50/60 Hz, optionally 115 V 50/60 Hz.



***Before switching on, check whether the centrifuge is connected to power supply correctly.
Check centrifuge before usage whether she is installed correctly.***

3.4. Fuses.

The centrifuge has standard protection with the WTA-T 4 A 250 V fuse for centrifuge supplied by 230V 50/60 Hz and WTA-T 6,3 A 250 V fuse for centrifuge supplied by 115 V 50/60 Hz. Fuse is situated in the plug-in socket unit at back wall of the centrifuge.

4. Description of the centrifuge.

4.1. General description.

New generation of MPW Med. instruments laboratory centrifuges is provided with state-of-the-art microprocessor control systems, very durable and quiet asynchronous brushless motors and accessories consistent with requirements of the present-day user.

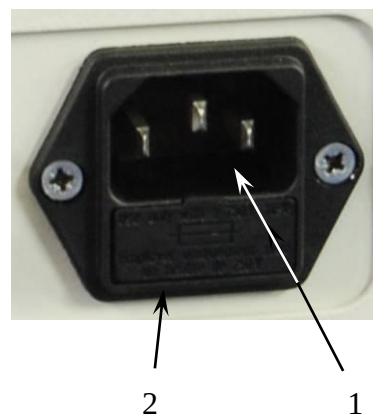
4.2. Service elements.



Drawing No.1. General view

Drawing No.2.Back of centrifuge

1. Plug-in socket
2. Fuse base





Drawing No. 3. Unit elements of the angle rotor

5. Safe working conditions.

5.1. Servicing personnel.

The MPW-351e laboratory centrifuge can be operated by laboratory personnel after getting acquainted with Operating Instruction.



***Operating Instruction shall be held all the time near the centrifuge.
Operating Instruction must be kept always at hand!!!***

5.2. Guarantee and operational use period.

Guarantee period for the MPW-351e centrifuge amounts to minimum 24 months. Principles are specified in guarantee certificate. The service life of the centrifuge specified by the manufacturer amounts to 10 years.



After termination of guarantee period it is necessary to carry out yearly technical inspections of the centrifuge. Only service personnel authorized by manufacturer may perform the inspections.

The manufacturer reserves the right to make modifications to produced goods.

5.3. Safekeeping period.

Maximum period of storage of not used centrifuge amounts to 1 year. After this period, a service authorized by manufacturer should carry out technical inspection of the centrifuge.

5.4. Hints on centrifuging.

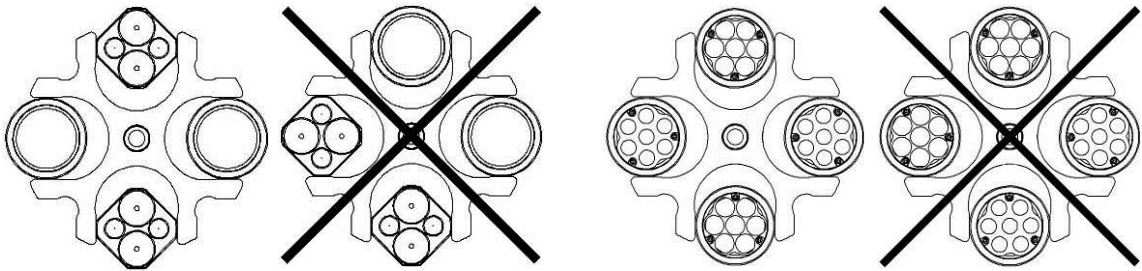


- **Set the centrifuge in horizontal position on rigid base.**
- **Ensure safe positioning location.**
- **Ensure free space around the centrifuge (amounting to at least 30 cm left free).**
- **Ensure sufficient ventilation.**
- **Fix the rotor on the motor axis firmly.**

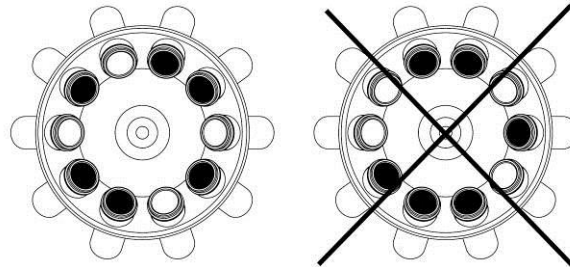


- **Avoid unbalance.**
- **Load opposite buckets with the same accessories.**
- **Centrifugation of the test tubes of different sizes.**

There is a possibility to centrifuge test tubes of different sizes; however, it is absolutely necessary in such cases that opposite buckets and round carriers be the same. Mass of different containers with test tubes spun at the same time has to be comparable.



- Not only the test tubes shall be inserted symmetrically, but also round carriers and their hangers shall be equally loaded. It is e.g. not allowed to operate centrifuge only external part of reductive insert loaded.
- It is necessary to insert test tubes symmetrically on the opposite sides.



- Fill test tubes outside the centrifuge.
- Please pay special attention to the quality and proper thickness of the glass test tubes walls. Those shall be test tubes for centrifuges, of proper durability up to 5,000 x g.
- In order to protect the centrifuge against unbalance, fill in the test tubes up to the same weight.



- Lubricate the swing-out rotor journal pins.
- Use only accessories in good condition.
- Protect equipment against corrosion using accurate preventive maintenance.



- Infectious materials could be processed in closed buckets only.



- It is not allowed to centrifuge explosive and inflammable materials.
- It is not allowed to centrifuge substances prone to reacting in result of supplying high energy during centrifugation.

5.5. Hazards and precautions



- Prior to switching the centrifuge on, one shall read carefully all sections of this instruction in order to ensure smooth operation and avoid damages of this device or its accessories.

- Centrifuge shall not be operated by unqualified personnel.



- Centrifuge must not be transported with the rotor mounted on the shaft.
-

-
- One must use original rotors, test-tubes and spare parts only.
-



- In the case of faulty operation of the centrifuge one shall ask for assistance of service of MPW MED. INSTRUMENTS Company or its authorized representatives.
-



- It is not allowed to switch the centrifuge on if it is not installed properly or rotor is not fitted correctly.
-



- The centrifuge must not be operated in places where explosion hazard exists as it is not explosion-proof.
 - It is not allowed to centrifuge materials capable of generating inflammable or explosive mixtures when subjected to air.
-



- It is not allowed to subject to centrifugation toxic or infectious materials with damaged leak proof seals of the bucket or test-tube. Proper disinfection procedures have to be carried out when dangerous substances contaminated the centrifuge or its accessories.
-



- It isn't allowed to open the cover manually in emergency procedure when rotor is still turning.
-



- It isn't allowed to exceed load limit set by the manufacturer. Rotors are intended for fluids of average homogeneous density equal to 1.2 g/cm³ or smaller when centrifugation is carried out at maximum speed. When fluids of higher density shall be used, then it is necessary to limit speed (see point 7.3.3 "Maximum load").
-



- It is not allowed to use the rotors and round carriers with signs of corrosion or other mechanical defects.
 - It is not allowed to centrifuge highly corrosive substances which may cause material impairment and lower mechanical properties of rotor and round carriers.
 - It isn't allowed to use rotors and accessories not admitted by the manufacturer. Let to use commercial glass and plastic test tubes, which are destined to centrifuging in this laboratory centrifuge. One should absolutely not use poor quality test tubes. Cracking of glass vessels and test tubes could result in dangerous vibration of the centrifuge.
-



- It is not allowed to lift or shift the centrifuge during operation, and rest on it.
 - It is nor allowed to stay in the safety zone within 30 cm distance around the centrifuge neither leave within this zone some things, e.g. glass vessels.
 - It is not allowed to put any objects on the centrifuge.
-

6. Operation of the centrifuge.

6.1. Mounting of the rotor and accessories.

1. Connect the centrifuge to the mains (master switch on right side of the centrifuge).
2. Open the cover of the centrifuge by pressing the **COVER** key. Prior to putting the rotor in, one has to check if rotational chamber is free of impurities, e.g. such as dust, glass splinters, residues of fluids that must be taken away.
3. One shall fit the rotor on the motor shaft driving it home on the cone.
4. Screw-in the bolt for fixing the rotor (clockwise) and screw it tightly home with the supplied spanner for the rotor.
5. Swing-out rotors have to be provided with the buckets in all seats. One should remember that every buckets swings individually. Bucket suspension studs should be lubricated periodically with technical petroleum jelly.
6. One should use only buckets intended for selected types of the rotor - see p. 2.1. "Accessories".
7. Fill test tubes outside the centrifuge.
8. Put on or screw the caps on vessels and rotors (if applicable).
9. In the case of centrifuging in an angle rotor, test tubes (buckets) have to be filled properly in order to avoid overflows.

10.  **CAUTION:** *Centrifuge will tolerate small weight differences occurring during loading of rotors. However it is recommended to equalize vessels loads as much as possible in order to ensure minimal vibrations during operation. When the centrifuge is started with large imbalance, the unbalance control system will switch-off the drive system and error signal will be transmitted. On the monitoring panel, U sign will be displayed.*
11. In order to prolong lifetime of the rotor and gaskets rotors shall be lubricated with the maintenance oil, while gaskets and threaded parts shall be lubricated with the technical petroleum jelly.
12. For replacement of the rotor one shall unscrew clamping and then grab the rotor with both hands at opposite sides, taking it away from drive shaft by pulling it up.

6.2. Construction and safety measures.

The centrifuge has rigid self-supporting structure. Housing was made of sheet aluminium, back made of steel sheet. Front and cover was made of ABS type plastic. Cover is fixed on steel axles of hinges and from the front it is locked with two electromagnetic locks blocking possible opening during centrifugation. Rotation chamber casing was made of thick steel sheet. The rotation chamber bowl is made of stainless steel sheet. Rotors and containers are from aluminium, lids from polycarbonate and reductive inserts from the polypropylene.

6.3. Drive.

Low noise induction motor constitutes the drive.

6.4. Data input and output.

Data setting and read-out system forms hermetically closed keyboard with distinctly accessible operation points. Easily readable displays signalling individual performed operations facilitate operator's programming and recording of parameters and condition of the centrifuge.

6.5. Controls.

The microprocessor control unit of the centrifuge ensures broad possibilities of providing, realisation and reading of work parameters, that is:

- selection of rotational speed within $100 \div 4500$ rpm at 100 rpm interval;
- setting centrifugation time within 0-99 min range at 30 s interval;
- selection of **SHORT** – short duration operation to programmed speed through 10 minutes.,

6.6. Safety devices.

Apart from the above described passive devices and safety measures there exist as well active devices and elements as follows:

6.6.1. Cover lock.

The centrifuge can be started only with properly closed cover (the dot “●” symbol will display). , the cover can be opened only after stopping the rotor. In the case of emergency opening of the cover during operation, the centrifuge will be immediately switched-off and the rotor will brake till complete stopping. With opened cover (the **O** symbol will display) the drive is completely disconnected from the power, which makes it impossible to start the centrifuge.

Emergency cover release

In the case of e.g. mains failure it is possible to open the cover by hand. On the left side of the casing there is a screw that shall be unscrewed with the spanner for emergency opening of the cover (17642). The cover can be released by pulling the visible ropes by the screw.



The cover can be unlocked and opened only when the rotor is in the rest state.

6.6.2. Unbalanced load checking system.

When loads of opposite buckets or carriers in rotors are unbalanced, the drive will be switched-off during acceleration or operation of the centrifuge – and the **U** sign will be displayed.

6.6.3. Rest state inspection.

Opening of the centrifuge's cover is possible only with the rotor in the state of rest. This state is being checked by the microprocessor which recognizes and signals with **S** sign on the display the rest state prior to opening the cover.

6.6.4. Motor temperature protection.

The motor has the temperature sensor for overheating protection.

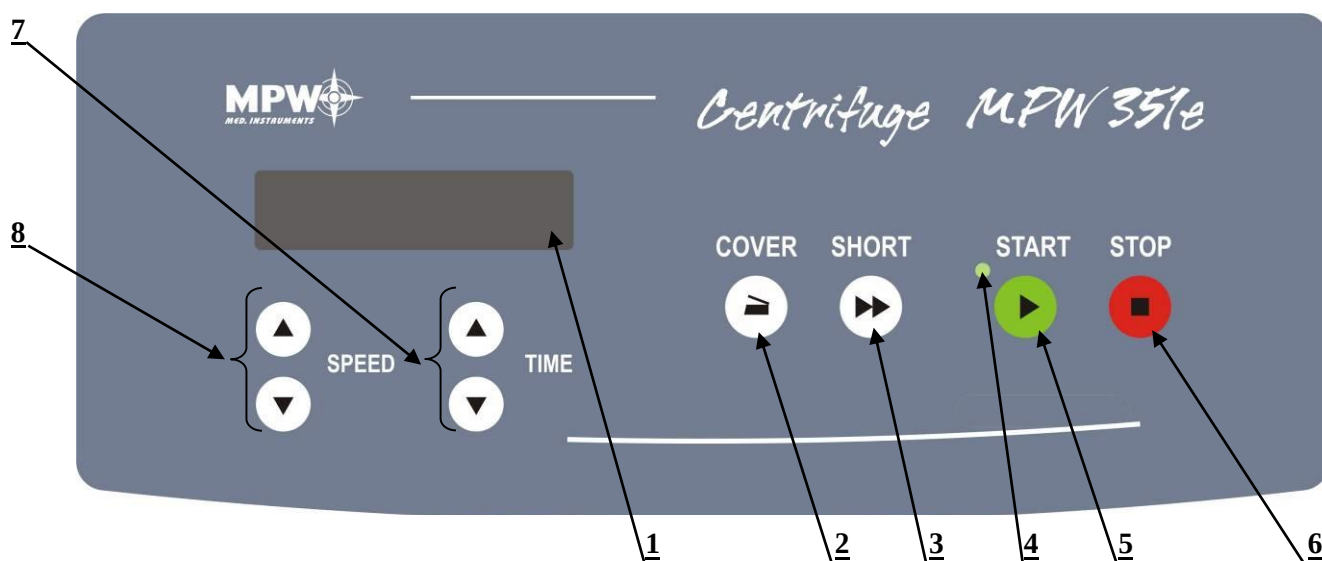
If motor temperature exceeds admissible temperature drive will be switched off and **T** sign will be displayed. It is necessary in such case to switch off the power. After cooling down of motor and repeated including of power supply the **T** sign is disappear and if he isn't occurring further away overheating the centrifuge should work correctly.

7. Description of the centrifuge operating elements.

Power switching ON/OFF is carried out with master switch situated on right side of the centrifuge. All settings on the centrifuge are done by means of the control panel. Panel comprises control keys and display.

7.1. Control panel - Drawing No. 4.

The control panel placed on the front casing serves the purpose of controlling centrifuge operation.



Drawing No.4. Control panel

- | | |
|------------------------|-----------------------|
| 1. Display. | 5. START key. |
| 2. COVER key. | 6. STOP key. |
| 3. SHORT key. | 7. TIME keys. |
| 4. START diode. | 8. SPEED keys. |

Control panel comprises following elements [Drawing No.4]:

1. Function **START** key [5] serves for starting centrifugation program with parameters presented on display.

2. Function **STOP** key [6] key serves for:

- interrupting centrifugation program in any program phase and braking the rotor,
- saving of preset **SPEED** and **TIME** centrifugation parameters

3. Function **COVER** key [2] serves for opening of the cover

4. Function **SHORT** key [3] serves for short duration operation

5. **TIME** keys [7] serve for time programming

6. **SPEED** keys [8] serve for speed programming

7. **START** diode [4] is signalling the state of the rotor - blinking – rotor rotates,
not illuminated – rotor does not rotate

8. Display [1]



- | | |
|------------------------|---|
| 1. Upper display field | S : 4 digits (rpm) RCF 4 digits (x g) |
| 2. Lower display field | T : 4 digits (m/s) S (STOP) O (Opened cover) U (Unbalance),
T (overload of motor) |

7.2. Switching the centrifuge on.

After switching power ON the control system calls recently implemented program and displays in relevant fields rotational speed, duration of centrifugation and cover opening status. Provided that rotor in the centrifuge is stopped, it is possible to open the cover by means of **COVER** key.

Stopped rotor status is displayed **S** sign in the display field. When this symbol is not already displayed, then one must wait till this rotor stops and the above mentioned symbol appears.

7.2.1. Selection of the program.

Control panel can save 1 program preset by the user. Program acceptance consists in pressing **STOP** key.

7.2.2. Start of the program.

After acceptance of the program and checking if rotor was mounted, centrifuge can be started with pushing **START** key, provided that cover is closed.

7.2.3. Unbalance.

The centrifuge is provided with the rotor unbalance sensor and when it will be activated, centrifugation process will be stopped through fast braking and at the same time **U** sign will be displayed. Cancellation of this error is possible only through pressing **COVER** key after stopping of the rotor. One must check if rotor was correctly loaded, close the cover and once more start the program. In order to protect the rotor against beating in opposite areas of the rotor, it has to be provided with identically filled buckets, carriers, test-tubes etc. for getting the best balance possible. Unbalance causes noise and vibrations during operation, and adversely affects power transmission system (motor, shock absorbers). The better balance, the smoother will be the centrifuge operation and therefore longer useful life of driving system. Moreover ideal separation level is obtained, as already separated constituents would not be moved up by vibration.

7.2.4. Emergency stop.

At any time during centrifuging it is possible to interrupt the process and stop the rotor quickly with single pressing the **STOP** key.

7.2.5. End of the centrifuging.

After ending the time of centrifuging set in the program, the rotor decelerates in accordance. At end of deceleration, rotational speed drops slower in order to ensure soft settling of rotor carriers. After stopping, sound signal is generated, **S** sign is displayed. After pressing **COVER** key, the cover opens and **O** sign is displayed.

7.2.6. Programming.

Programming mode is activated with pressing **SPEED** and **TIME** (+) (-) keys after selection of parameters of the program which one would like to save or change. Acceptance of preset parameters is done by pressing **STOP** key. One can save one program only.

7.2.7. Version of the centrifuge.

The information about the centrifuge type, program version and internet address are displaying at once after switching supply on for 2 seconds.

7.3. Mathematical relations.

7.3.1. RCF – relative centripetal force.

RCF acceleration is the acceleration generated by the rotary motion of the rotor acting upon tested product and it can be calculated according to the formula:

$$\text{RCF} = 11,18 \times r \times (n/1000)^2$$

$$\text{RCF} \quad [\times g], \quad r \quad [\text{cm}], \quad n \quad [\text{rpm}]$$

Depending on the distance of particles of the tested product from the axis of rotation, one can establish with use of the above formula the minimum RCF, average RCF or maximum RCF. On the basis of preset RCF value and given radius of the bottom of the bucket one can calculate with it the rotational speed to be set in the program of centrifuging. Selection of the time of sedimentation and the RCF value shall be carried out experimentally for any given product.

Once every 100 rpm, an electronic circuit automatically calculates and displays RCF value. In order to program required RCF value one shall use nomograph (Drawing No. 5) or change the rotational speed, matching displayed value to required acceleration value.

7.3.2. Nomograph of relationship - rotational speed/centrifuging radius/RCF

7.3.3. Maximum load.

In order to avoid overloading of the rotor one shall observe maximum load which is recorded on every rotor. Maximum permissible load is reached when all test-tubes are filled with the fluid with 1.2 g/cm³ density.

If density of the centrifuged liquid is higher than 1.2 g/cm³, then test-tubes could be filled only partially or one shall limit operation speed of the centrifuge, which is being calculated from the formula:

$$n_{\text{perm}} = n_{\text{max}} * \sqrt{\frac{1,2}{\gamma}};$$

$$\gamma = \text{specific gravity} \left[\frac{G}{\text{cm}^3} \right];$$

$$n_{\text{max}} \quad [\text{maximum rotational speed - rpm}]$$

8. Cleaning, disinfection, maintenance.

CAUTION! *It is necessary to use protective gloves during following work.*

8.1. Cleaning of the centrifuge.

For cleaning, water with soap or other water soluble mild detergent shall be used. One should avoid corrosive and aggressive substances. It is prohibited to use alkaline solutions, inflammable solvents or agents containing abrasive particles. Using wiping cloth, remove condensate or residues of the products from the rotor chamber. It is recommended to keep the cover opened when the centrifuge does not work in order to expel the moisture.



In the case the user decides to use centrifuge and equipment cleaning methods other than the ones described in this manual, the user shall contact the device manufacturer in order to check whether the cleaning method chosen does not damage the device.

8.2. Cleaning of the accessories.

In order to ensure safe operation one shall carry out in regular way periodical maintenance of the accessories. Manufactured rotors, buckets and round carriers have to withstand steady high stresses originating from the centrifugal force. Chemical reactions as well as corrosion (combination of variable pressure and chemical reactions) can cause corrosion or destruction of metals. Hard to observe surface cracks increase gradually and weaken material without visible symptoms. In the case of observation of surface damage, crevice or other change, as well as the corrosion, the given part (rotor, bucket, etc.) shall be immediately replaced. In order to prevent corrosion one has to clean regularly the rotor with the fastening bolt, buckets and round carriers. Cleaning of the accessories shall be carried out outside of the centrifuge once every week or still better after each use. Then, those parts shall be dried using soft fabric or in the chamber drier at ca. 50° C.

Especially prone to the corrosion are parts made of aluminium. For cleaning them one should use neutral agent of pH value from 6 to 8. It is forbidden to use alkaline agent of pH above 8. In this way, the useful service life of the device is substantially increased and susceptibility to corrosion is diminished. Accurate maintenance increases the service life as well and protects against premature rotor failures. Corrosion and damages resulting from insufficient maintenance could not be subject of claims lodged against the manufacturer.

8.3. Lubrication.

The rotor pins shall be always lubricated with technical petroleum jelly. In this way, the uniform deflection of the buckets and quiet centrifuge operation is ensured.

8.4. Glass tube cracking.

In the case of glass tube cracking, all debris shall be accurately removed. Rubber inserts shall be exactly cleaned or possibly replaced. Otherwise one has to take into account following possibilities:

- Glass particles left in the rubber cushion (pad) will cause once more glass cracking.
- Glass particles left in containers make impossible uniform deflecting of the buckets and round carriers resulting in unbalance.
- Glass particles left in the rotor chamber cause metal abrasion because of strong air circulation. This dust will not only contaminate the centrifuge chamber, rotor, buckets, carriers and centrifuged material but will cause as well damages of surfaces of the accessories, rotors and the rotation chamber. For complete removal of glass particles and metal dust from the rotor chamber it is recommended to place strip of vaseline on the bowl (from the top down to bottom). Then rotor shall operate for several minutes at moderate speed. Glass and metal particles will gather on lubricated area and could be easily removed with the piece of cloth together with the grease. This operation can be repeated in case of a need.

8.5. Sterilization and disinfections of the rotational chamber and accessories.

One can use all standard disinfectants. The centrifuges and accessories are constructed from various materials and one should take into account possible variety of materials. During sterilization by means of steam one should consider temperature resistance of individual materials.

STERILIZATION

	Sterilization* temp. 121 °C, time 20 min	Radiation – β/γ 25 kGy	Gas (ethylene oxide)	Chemical compounds (formalin, ethanol)
PS	no	yes	no	yes
SAN	no	no	yes	yes
PMMA	no	yes	no	yes
PC	yes ¹⁾	yes	yes	yes
PVC	no ²⁾	no	yes	yes
POM	yes ¹⁾	yes	yes	yes
PE-LD	no	yes	yes	yes
PE-HD	no	yes	yes	yes
PP	yes	yes	yes	yes
PMP	yes	yes	yes	yes
ECTFE/ETFE	yes	no	yes	yes
PTFE	yes	no	yes	yes
FEP/PFA	yes	no	yes	yes
FKM	yes	-	yes	yes
EPDM	yes	-	yes	yes
NR	no	no	yes	yes
SI	yes	no	yes	yes
* Laboratory vessels have to be exactly cleaned and rinsed with the distilled water before the sterilization in the autoclave. It is always necessary to remove closures from containers! 1) The frequent steam sterilization reduces mechanical durability! PC test tubes may become useless. 2) Except PVC hoses which are resistant to the steam sterilization in the temperature 121 °C.				

Abbreviations of names of characterized plastics

PS:	Polystyrene	ECTFE:	Ethylene/chlorotrifluoroethylene
SAN:	Styrene-acrylonitrile	ETFE:	Ethylene/tetrafluoroethylene
PMMA:	Polymethyl methacrylate	PTFE:	Polytetrafluoroethylene
PC:	Polycarbon	FEP:	Tetrafluoroethylene/perfluoropropylene
PVC:	Polyvinyl chloride	PFA:	Tetrafluoroethylene/perfluoroalkylvinylether
POM:	Acetal polyoxymethylenel	FKM:	Fluorcarbon rubber
PE-LD:	Low density polyethylene	EPDM:	Ethylene propylene diene
PE-HD:	High density polyethylene	NR:	Natural rubber
PP:	Polypropylene	SI:	Silicon rubber
PMP:	Polymethylpentene		



For centrifuging infectious materials it is necessary to use hermetically closed buckets, in order to prevent they migration into the centrifuge.

Rotors, buckets and round carriers can be sterilized in autoclave with temperature 121° – 124° C and pressure 215 kPa during 20 min. In the centrifuge, disinfectants and cleaning agents generally used in medical care should be used (e.g. Aerodesina-2000, Lysoformin 3000, Melseptol, Melsept SF, Sanepidex, Cutasept F).



User is responsible for proper disinfections of the centrifuge, if some dangerous material was spilled inside or outside of the centrifuge.
During the above mentioned works one must wear safety gloves.

9. Emergency conditions – service.

9.1. Fault finding.

Majority of faults could be removed by switching the centrifuge **OFF** and then **ON**. After switching the centrifuge **ON**, there shall be displayed parameters of the recently implemented program and sound signals comprising four successive tones shall be generated. In the case of short-duration power failure the rotor is decelerate.

Please find below the most frequent faults and their repair methods.

Lack of display and check sound:	Remedies:
• <i>Is mains socket live?</i>	<i>Check mains socket fuse.</i>
• <i>Is supply cable plugged into mains?</i>	<i>Plugs supply cable correctly.</i>
• <i>Is input fuse good?</i>	<i>Replace input fuse (rated data on rating plate).</i>
• <i>Is master switch ON?</i>	<i>Switch ON power supply.</i>
• <i>The above was checked and still there is no display active and check sound audible</i>	<i>Call service.</i>
Centrifuge does not start	Remedies
P sign is displayed	Call service
• START key pressing does not generate reaction or single tone only	
- Rotor stopping sign, (S) is not displayed yet	- Wait till rotor stops and displaying the rotor stopping symbol(S)
- Cover opening sign (O) displayed	- Close cover. Dot sign “.” must displayed.
- START diode is blinking:	- Centrifugation cycle in progress, press STOP key or wait till cycle ends.
• <i>Indications are proof for cycle in progress and motor does not start</i>	<i>Switch power supply OFF/ON. If fault still persists call service.</i>
Programming function not active	Remedies
<i>It is impossible to record parameter values to memory; last recorded program can not be recalled. Disturbances on displays possible too.</i>	<i>Call service.</i>
Centrifuge starts but not accelerates	Remedies
<i>E</i> symbol displayed after stopping. Drive overload	Wait for 15 minutes and switch again after opening and closing the cover.
• After stopping U sign is displayed	
- Unequal rotor load	- Centrifuge load shall be balanced
- Inclined centrifuge	- Centrifuge shall be leveled
- Faulty drive (mechanical damage)	- Call service
- Centrifuge was displaced during operation	- Switch ON the centrifuge afresh after opening and closing the cover
It is not possible to open the cover.	Remedies
• Rotor stopping S sign not displayed yet, after pressing COVER key single tone is audible	Rotor is still rotating. Wait for stopping of the rotor and the square symbol displaying
• Nothing is displayed	Check the centrifuge power supply
• Rotor stopping sign S is displayed, but cover can not be opened	Call service
Centrifuge stop the program and not start	Remedies
• T sign is displayed(motor overheating)	Switch off the centrifuge and wait for 20 minutes and switch on after opening and closing the cover.
• The centrifuge still not starts.	Call service

9.2. Work safety inspection.

For safety reasons, inspections of the centrifuge carried out by the authorized service at least once a year after the period of warranty. The reason for more frequent inspections could be corrosion inducing environment. Examinations should end with issuing "Report of validation, the check on the technical state of the laboratory centrifuge". It is being recommended to establish "Technical passport" or "Log of the apparatus", in whom every repairs and reviews are being registered. Both these documents should be stored in the place of use of the centrifuge.

9.3. Inspection procedures carried out by the operator.

Operator has to pay special attention to the fact that the centrifuge parts of key importance due to safety reasons are not damaged.

This remark is specifically important as for:

1. Motor suspension
2. Motor axis concentricity
3. Fixing the pins in the bucket.
4. Centrifuge accessories and especially structural changes, corrosion, preliminary cracks, abrasion of metal parts.
5. Screw joints.
6. Inspection of the rotor assembly.
7. Inspection of bioseals of the buckets if such are used.
8. Control of execution of the guarantee yearly technical inspection of the centrifuge

Only the manufacturer-specified holders, included in the equipment list, as well as centrifuge capillaries, which diameter, length and durability are suitable, should be used for spinning in this centrifuge. The use of equipment made by other manufacturers should be consulted with the manufacturer of the centrifuge. Disinfectants and cleaning agents generally used in medical care should be used in this centrifuge (e.g. *Aerodesina-2000*, *Lysoformin 3000*, *Melseptol*, *Melsept SF*, *Sanepidex*, *Cutasept F*).

10. Repair conditions.

Manufacturer grants to the Buyer the guarantee on conditions specified in the Guarantee Certificate. Buyer forfeits the right to guarantee repair when using the device inconsistently with the Operating Instruction provisions, when damage results from the User's fault. Repairs should be carried out in authorized service workshops, granted with the MPW Certificate. The centrifuge shall be sent to repair after decontaminating disinfections. Information about authorized service workshops could be obtained from the Manufacturer.

11. Disposal.

When you are disposing the device, the respective statutory rules must be observed.

Pursuant to guideline 2002/96/EC (WEEE), all devices supplied after August 13, 2005, may not be disposed as part of domestic waste. The device belongs to 8th group (medical devices) and is categorized in business to business field.



The icon of the crossed-out trash can shows that the device may not be disposed as part of domestic waste.

The waste disposal guidelines of the individual EC countries might vary. If necessary, contact your supplier.

12. Manufacturer's data.

“MPW MED. INSTRUMENTS“

SPÓŁDZIELNIA PRACY

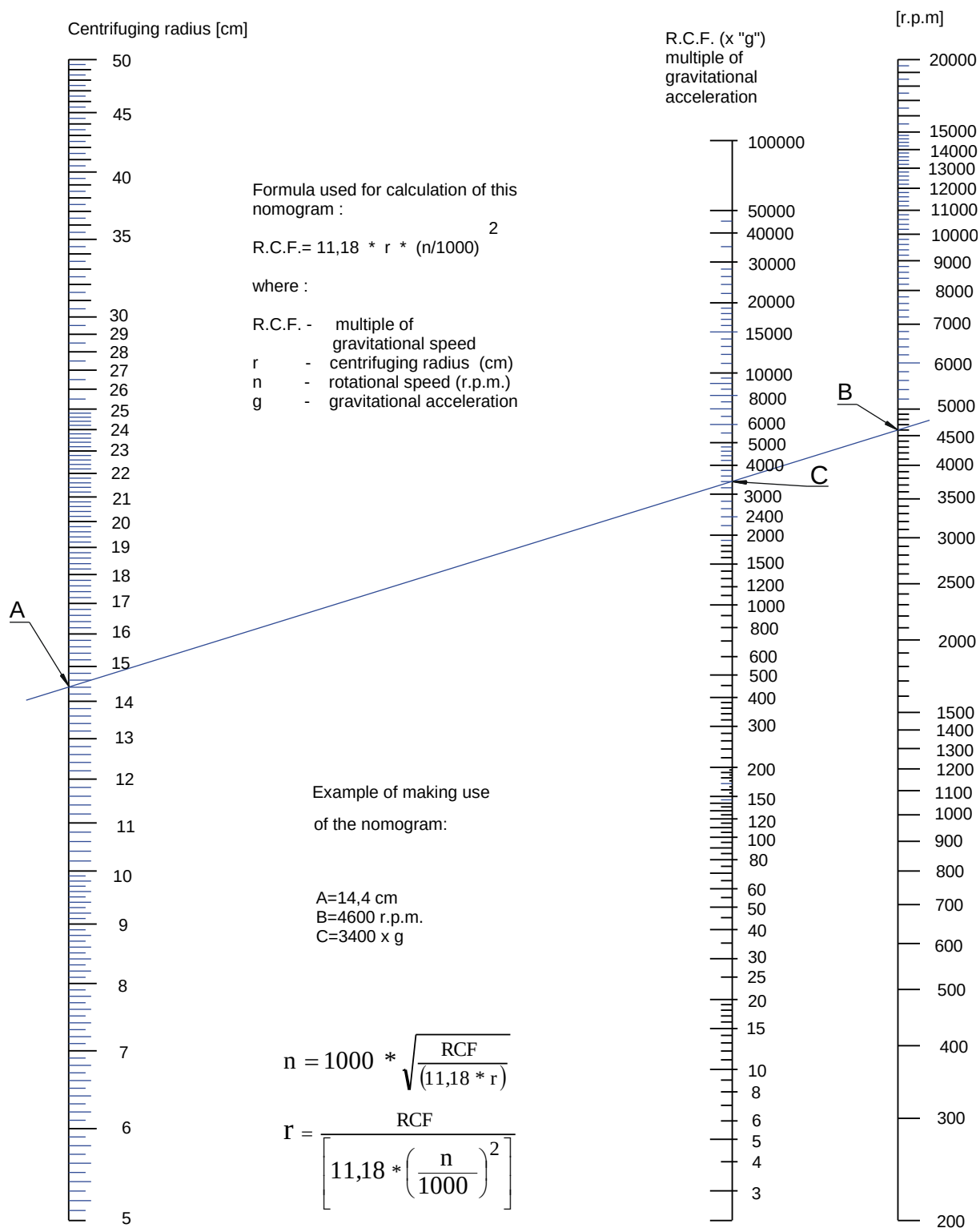
46 Boremlowska Street, 04-347 Warsaw, Poland .

Tel. (+ 48) 22 610 56 67 Selling
 (+ 48) 22 610 81 07 Service
Fax. (+ 48) 22 610 55 36

E-mail: mpw@mpw.pl
 www.mpw.pl

13. Distributor information.

YOUR DISTRIBUTOR:
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Drawing No. 5 – Nomograph.

14. Table of chemical resistance to the interaction of various categories of reagents of plastics

Groups of the substance in temp. 20°C	PS	SAN	PMMA	PC	PCV	POM	PE-LD	PE-HD	PP	PMP	ECTFE ETFE	PTFE FEP PFA	FKM	EPDM	NR	SI
Aldehydes	-	-	○	○	-	○	-	+	+	○	+	+	+	+	○	○
Cyclic alcohols	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+
Esters	-	-	-	-	-	-	+	○	○	○	+	+	-	○	○	○
Ether	-	-	-	-	-	+	+	○	○	-	+	+	-	-	-	-
Ketones	-	-	-	-	-	+	○	○	○	○	○	+	-	○	-	-
Strong or concentrated acids	○	-	-	-	+	-	+	+	+	+	+	+		+	-	-
Weak or diluted acids	○	○	○	○	+	-	+	+	+	+	+	+	+	+	○	○
Oxidizing acids or oxidizing substances	-	-	-	-	-	-	-	-	-	-	+	+	○	○	-	-
cyclic hydrocarbons	-	-	○	○	+	+	+	+	+	○	+	+	○	-	-	-
Ahs	-	-	-	-	-	+	+	○	○	-	+	+	○	-	-	-
Haloid hydrocarbons	-	-	-	-	-	+	+	○	○	-	+	+	○	-	-	-
Alkalis	+	+	-	-	+	+	+	+	+	+	+	+	○	+	+	○

+ = very good chemical resistance

Permanent action of the substance isn't causing damage through 30 days. The material is able to be resistant through years.

○ = chemical resistance of good to limited

Continuous action of the substance is causing insignificant damage through the period of 7-30 days, partly reversible (e.g. puffing up, softening, reduced mechanical durability, discoloring).

- = limited chemical resistance

The material isn't able to have the continuous contact with the substance. The immediate occurrence of damage is possible (e.g. the loss of mechanical durability, the deformation, discoloring, bursting, dissolving).

Abbreviations of names of characterized plastics

PS:	Polystyrene	ECTFE:	Ethylene/chlorotrifluoroethylene
SAN:	Styrene-acrylonitrile	ETFE:	Ethylene/tetrafluoroethylene
PMMA:	Polymethyl methacrylate	PTFE:	Polytetrafluoroethylene
PC:	Polycarbon	FEP:	Tetrafluoroethylene/perfluoropropylene
PVC:	Polyvinyl chloride	PFA	Tetrafluoroethylene/perfluoroalkylvinylether
POM:	Acetal polyoxymethylenel	FKM	Fluorcarbon rubber
PE-LD:	Low density polyethylene	EPDM:	Ethylene propylene diene
PE-HD:	High density polyethylene	NR:	Natural rubber
PP:	Polypropylene	SI:	Silicon rubber
PMP:	Polymethylpentene		

DECLARATION OF CONFORMITY

Product

Laboratory centrifuge

Model

MPW-351e

Product classification on the basis of
the Directive 98/79/EC

Non classified to list A or B and not for
self-testing

Product complies with the requirements:

• **Directive 98/79/EC (IVD), including the requirements of harmonised standards:**

PN-EN ISO 13485:2012

PN-EN ISO 18113-3:2011

PN-EN ISO 13485:2012/AC:2013-03

PN-EN 61010-2-101:2005

PN-EN 13612:2006

PN-EN 61326-2-6:2013-08

PN-EN ISO 14971:2012

PN-EN ISO 62366:2008

• **selected harmonized standards of Directive 2006/95/EC (LVD):**

PN-EN 61010-1:2011

PN-EN 61010-2-020:2008

• **Directive 2004/108/WE (EMC)**

• **standard PN-EN ISO 15223-1:2012**

CZŁONEK ZARZĄDU

PREZES ZARZĄDU

Wojciech Nojszewski

mgr Hanna Matyjaszewska

„MPW MED. INSTRUMENTS”
SPÓŁDZIELNIA PRACY
w Warszawie

„MPW MED. INSTRUMENTS”
SPÓŁDZIELNIA PRACY

Warsaw, 46 Boremlowska Street
Quality policy in line with ISO 9001:2008

Certifying authority



Warsaw, 13.11.2014

nr 10.351e.03

DECLARATION OF DECONTAMINATION

In order to protect our employees please fill out the declaration of decontamination completely before sending centrifuge to the manufacturer (repair).

1. **Device**

– type:

– serial No.:

2. **Description of decontamination**

(see user manual)

.....

.....

.....

.....

3. **Decontamination carried out by:**

– name:

4. **Date and signature**

.....

DECLARATION OF DECONTAMINATION

In order to protect our employees please fill out the declaration of decontamination completely before sending centrifuge to the manufacturer (return).

5. **Device**

– type:

– serial No.:

6. **Description of decontamination**

(see user manual)

.....

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.....

.....

7. **Decontamination carried out by:**

– name:

8. **Date and signature**

.....